22 February 1971

MEMORANDUM FOR THE 40 COMMITTEE

SUBJECT: Aircraft Survey Program

I refer to my memorandum of 21 January transmitting copies of correspondence between Dr. Kissinger and Dr. Edward E. David, Jr., regarding the proposed use by NASA of the U-2C aircraft for international earth survey missions.

Attached are copies of the following additional papers which NASA desires to have made available to the 40 Committee members prior to discussion of this subject:

1. Draft Press Release, dated January 20, 1971

2. Draft Proposed Responses to Questions, dated January 20, 1971

3. Draft Position Paper for Dr. Low, dated January 20, 1971

NASA wishes it to be clear that its immediate proposals for use of the U-2C in the proposed earth resources survey program are for repetitive testing flights with various sensors over four areas of the United States only. Utilization of the U-2 abroad for these purposes will be contingent much later upon the results of the testing and agreement to participate by the foreign governments concerned.

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Attachments (3)

Distribution:
Mr. Mitchell
Mr. Packard
Mr. Johnson
Admiral Moorer
Mr. Helms

NASA review completed

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January 20, 1971

DRAFT PRESS RELEASE

The National Aeronautics and Space Administration is intensifying its Airborne Research Program by acquiring additional aircraft and concentrating flights over four ecological test areas in the United States.

The objectives are:

- to simulate over the four sites as closely as possible the data output of the Earth Resources Technology Satellite (ERTS) scheduled for launch in 1972,
- to collect data over various test sites simultaneous with passes of the ERTS satellites and Skylab after they are orbited.
- and to conduct observations in astronomy, atmospheric physics and geophysics for NASA's Physics and Astronomy programs.

To implement the program, the U. S. Air Force has made available, under a loan agreement, two high altitude aircraft for addition to NASA's Airborne Research Program.

The planes, Lockheed U-2s, are capable of sustained flight at very high altitudes, thereby providing ideal platforms for remote sensing of large areas. For example, a single photograph from high altitude can encompass 500 square miles of the Earth's surface.

When both aircraft become operational in June 1971, their primary assignment will be to obtain Earth resources data over the four test sites. The data they gather will simulate scale, spectral content, and the repetitive coverage of the ERTS satellites. This will give users a year's time in advance of the ERTS launch to gain experience with data similar to ERTS data.

The aircraft will make repetitive flights over the test sites at an altitude of about 60,000 feet. To simulate the coverage provided by the ERTS satellites, each site will be photographed every 18 days at the same local time.

The test sites are:

- Arizona site east of Phoenix: arid lands,
- two California sites, Feather River and Monterey/Los Angeles area: hydrology and agriculture.
- Chesapeake Bay: ecology and oceanography.

Cameras to be flown by the aircraft will gather data to approximate the scale and spectral information from two ERTS instruments, the Return Beam Vidicon (RBV) and the Multispectral Scanner (MSS).

The two U-2 aircraft complement three other planes, stationed at the Manned Spacecraft Center, Houston, Texas, in NASA's Earth Resources aircraft program. These planes are the P3A, a modified Electra; a C-130B Hercules; and an RB-57F. It is planned that these aircraft will be painted blue and white and will be named "NASA Earth Survey Aircraft 1 through 5."

Both U-2s will be permanently based at NASA's Ames Research Center, Moffett Field, California. For data acquisition missions over Eastern U.S. test sites, they will be staged either from NASA's Wallop's Island Station or from Langley Research Center, both of which provide easy access to the Chesapeake Bay test site.

Later in 1971, the U-2s will be used to carry out experiments in astronomy, atmospheric physics, and geophysics. The planes will be able to fly above most of the Earth's atmosphere, carrying telescopes and instruments that can observe in the infrared, visible, and ultraviolet portions of the electromagnetic spectrum.

An "Announcement of Flight Opportunity" will be issued by NASA later inviting scientists to participate in the astronomy flight program.

Pilots and ground crews will be provided under contract by Lockheed Aircraft Corporation, the original designers and fabricators of the aircraft. Direct project management will be the responsibility of the Ames Research Center, under the overall management of NASA's Office of Space Science and Applications.

Each aircraft is expected to fly some 50 hours per month, 600 hours per year. Total operating costs are estimated to be about $1 million per year, including maintenance, overhaul, flight operations, and data processing.

PROPOSED KQ'S

1. Q. What is the model of the U-2 NASA is acquiring?

   A. "C" Model

2. Q. What are the other model designations?

   A. Don't Know; ask USAF

3. Q. Are there any other "C" models? How many? Where are they? Where are they?

   A. Yes, we understand there are other "C" models in the USAF inventory. Don't know how many. Ask USAF for more.

4. Q. Were the aircraft NASA is getting ever used overseas or in spy missions?

   A. We don't know the personal history of the individual aircraft except that they are in good shape not damaged or worn out.

5. Q. What is the operational altitude of the U-2?

   A. NASA ERS missions are planned for around 68,000 feet.

6. Q. But what is the aircrafts maximum capability?

   A. The aircraft service ceiling is approximately 70,000 feet.

7. Q. We thought the altitude capability was much higher; are you constraining your answers because the facts are classified?

   A. No; the performance figures I have cited are unclassified and accurate.

THIS PAPER IS UNCLASSIFIED, BUT NOT APPROVED

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8. Q. What are the world altitude records?

A. The official IAF records are: jet aircraft - 1961 - USSR E66A- 34.7 KM, or nearly 114,000 feet; for level flight - 1965 - US YF 12A - 24.5 KM, or over 80,000 feet; and of course, the X-15 rocket plane at 95.9 KM, or nearly 315,000 feet.

9. Q. Why didn't you use the YF 12 that you share with the Air Force out at Edwards?

A. First, the YF 12 is an experimental aircraft dedicated to a joint high speed research program. Second, it is much too much airplane for our job; it goes too fast and it is much more expensive to operate. What we want is a reliable relatively slow platform for conducting experiments, not a supersonic research aircraft.

10. Q. Who will pilot the aircraft?

A. We will contract with Lockheed Aircraft Corporation for flight and ground crews to support the program.

11. Q. What kind of experience will the pilots have?

A. We expect to have experienced, highly qualified pilots familiar with high-altitude missions.

Q. Will they be retired military officers?

A. They may be.

Q. Have any of these pilots flown spy missions?

A. No.

12. Q. Are these aircraft surplus?

A. Technically, no; if they were, they would be sold or junked. However, they are not needed by the Air Force and are therefore available to NASA on loan.

13. Q. Can the Air Force recall them, or direct any of their missions?

A. The aircraft are on indefinite loan to NASA; there is no provision for recalling them. The Air Force will not direct any missions; NASA will have exclusive operational control over these aircraft.

14. Q. Will any classified equipment be flown, or will any of the data taken be classified?

A. No.

15. Q. Will all data be released?

A. Yes, it will be sent as rapidly as possible to the various investigators and will also be publicly available.

16. Q. What is the relationship between this program and these aircraft and the CIA?

A. None

Q. What was NASA's involvement in the Francis Gary Powers incident?

A. As you know Francis Powers used affiliation with NASA as a research pilot as a cover story. You will recall that the White House withdrew this statement a few days later.

17. Q. Will Gary Powers be involved in any way?

A. No.

18. Q. Will you fly overseas missions with the U-2's as you did for Brazil, Mexico, and Peru?

A. We foresee a full program of utilization within the U.S., just getting ready for [illegible]. If a cooperative agreement were reached with some other participating nation, it could include the use of

19. Q. What national and international reaction do you expect to the NASA use of this spy plane?

A. Certainly no negative reaction; this is a case of using the best and most economical equipment available to further experimentation in earth resources and environmental surveys. The program objectives are to learn how to use space data in the future to help us manage better the world we live in.

20. Q. Has this program been discussed with the Russians?

A. We have explored many areas of possible cooperation with the Soviet Union, among them remote sensing programs. The USSR has been invited to participate in the international earth resources survey workshop this April at the University of Michigan; we plan to have all our earth resources aircraft, on view nearby at that time.

DRAFT TO BE USED BY DR. LOW IN BRIEFING SELECTED MEMBERS OF CONGRESS ABOUT....JANUARY 25, 1971.

POSITION PAPER

The National Aeronautics and Space Administration has been investigating in depth the application of remote sensing techniques from aircraft and spacecraft to meeting the growing needs of the nation in the surveying of our earth's resources. As part of its overall program, NASA is developing an Earth Resources Technology Satellite (ERTS) for first flight in 1972. This satellite will observe the earth from orbit and return continuous telemetered images of the earth and oceans to ground stations. The objectives of this experimental application of space technology are to determine what the values of repetitive, synoptic multi-spectral imagery are to the many earth disciplines, including geology, agriculture, hydrology, oceanography, geography, cartography, and to the related fields of environmental, ecological, and natural resources management.

Somewhat later, the first experimental manned space station, Skylab, will provide additional opportunities for a wide variety of earth observations with different and more sophisticated sensors.

The data acquired by these two space missions are expected to be of great interest and value to the many participants with NASA in the earth resources survey program; these include major elements of the Departments of Agriculture, Commerce, and Interior as well as university scientists and regional, state, and local environmental and resource management institutions.

In order to prepare this large community of potential users of space data for the time when ERTS and Skylab are operating, and to determine the proper role for aircraft, as well as spacecraft, NASA has an ongoing aircraft program acquiring data over a broad range of test sites. NASA is augmenting this activity in order to provide precursory data that simulate as closely as possible the spectral content, scale, and time intervals between repetitive coverage that are expected from the satellite. This simulation, using high

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altitude aircraft, is planned over three U. S. regions where intensive studies in environmental remote sensing are already underway and where ground truth is well documented: California, Arizona, and the Chesapeake Bay.

The aircraft selected for this program must be capable of very high altitude sustained flight in order to permit the sensors to provide space-like data. In conjunction with the Air Force, NASA has selected the U-2 as the most economical and efficient experimental platform for this program.

Two U-2 aircraft currently not required by the Defense Department will be loaned to NASA for this program within the next several months and will join NASA's existing complement of earth resources survey aircraft. The two U-2's will be stationed at and managed by NASA's Ames Research Center, Moffett Field, California. The aircraft will be totally dedicated to NASA activities and under NASA's operational control at all times; there will be no other missions assigned to these planes. Pilots and ground crews will be provided for by contract with the Lockheed Aircraft Company, the original designers and builders of the U-2. Pilots will be former Air Force officers fully qualified and experienced in U-2 flight operations.

The aircraft system, performance, and capabilities, together with the NASA sensor packages and the data therefrom, will be completely unclassified, and the program will be carried out openly and publicly. A draft press release, proposed for issuance after completion of NASA's arrangements with the Air Force, is attached for information.

In addition to their primary role in the earth resources survey simulation, the U-2 will be able to serve as excellent high-altitude platforms for astronomical and geophysical experiments, supplementing NASA's present CV-990 research aircraft.

Because of the prior history of the U-2, NASA has taken this step only after a very careful assessment of the alternatives and after assuring itself that it could do so without constraints. It can be stated without reservation that NASA will acquire and operate these aircraft for its own programmatic research and development mission alone, and that there are no national security implications involved. NASA will use the U-2 because it is the most economical high-altitude airborne platform available; it is the same philosophy that controls NASA's present use of a modified reconnaissance version of the B57 bomber for research in earth survey sensors.